

Puget Sound Nutrient and Pathogen Control Strategy

Hood Canal Water Quality Issues

Problem:

- Chronically declining water quality conditions throughout HC
- Decreasing DO
- Increasing bacterial pollution
- Worsening habitat conditions (decreasing fish and shellfish populations).

WQ program issues:

- Direct impairment of beneficial uses (commercial, recreational, tribal fisheries)
- 40 individual 303(d) listings for DO in marine waters of Hood Canal.
- 150 individual 303(d) listings for bacteria in marine waters of Hood Canal.
- Proposed sewage infrastructure and design standards **along Hood Canal** (N removal)
- **NPDES permit updates in South Sound (LOTT N removal)**
- **Questions about N loading in entire Puget Sound and chronic effects on embayments**
- Tracking effectiveness of corrective actions
- Hatchery permit updates

Objective:

- Develop nitrogen source control strategy (in conjunction with bacterial control)

Strategy:

Develop and implement **multiple-scale** nutrient loadings assessment

- **Puget Sound as a whole**
- **Nested analysis of sensitive embayments (Hood Canal, South Sound, Oakland Bay, etc.)**

Data Gathering: data to support model development, stakeholder strategy development process, baseline condition assessment and to gauge effectiveness of potential solutions.

- Baseline conditions
- Nitrogen loading
- Identify thresholds and establish targets by segment
- Trend monitoring

Water Quality Assessment and Scenario Simulation: use water quality models and other qualitative analyses to answer key questions necessary for management strategy development, including –

- Identification and verification of key sources of N input to HC
- Quantification of total human contribution and influence on HC DO
- Identification of high risk areas
- Gauge effectiveness of potential solutions to improving DO in each identified target habitat
- Translate each phase of the N reduction strategy to DO improvement

Current Puget Sound Partnership nutrient & pathogen assessment recommendations:

Have regional experts use available information to look at the overall loadings of nutrients and pathogens throughout the Puget Sound basin, identify the relative contribution of the major sources (types or specific sites) and recommend whether these loadings should be capped at current levels or reduced. If appropriate recommend a target for reducing loadings and identify which sources should be addressed to achieve reductions.

Proposed Assessment Plan:

Hood Canal – Coordination Options

- EPA and WDOE apply South Puget Sound WQ model to HC and other sensitive areas.
- EPA and WDOE develop and align WQ program model with UW/HCDOP water quality model.
- EPA and WDOE request that UW/HCDOP modeling effort explicitly support WQ program analysis needs.

Other Sensitive Puget Sound Embayments

- WDOE develops models and TMDLs

Puget Sound as a whole

Short Term – respond to PS Partnership Recommendation

- WDOE and EPA assess overall loadings of N to Puget Sound
- Employ UW tools (e.g., Babson box model) and USGS evaluations (e.g., river transport)
- Make determinations regarding potential large scale effects of overall loadings (e.g., Do major metropolitan N loadings potentially affect sensitive embayments?)

Long Term

- UW develops Puget Sound water quality model for more refined analysis and supply of boundary condition to WDOE for embayment sub-models